

Docket No. 11440RRUS02U

**CLAIMS:**

What is claimed is:

- 1 1. A method to optimize accounting records in a wireless/packet data network,  
2 comprising the steps of:  
3 detecting that a communication link has been established between a mobile  
4 terminal and a host in a packet data network; and  
5 accumulating, at a packet data serving node disposed between the mobile  
6 terminal and the packet data network, accounting information relating to a wireless  
7 communication network serving the mobile terminal and the packet data network, the  
8 accounting information being used by service providers to generate billing data to  
9 minimize the frequency of producing accounting records by the packet data serving  
10 node.
- 1 2. The method of claim 1, wherein the accounting information includes first  
2 accounting information obtained from one or more base station controllers in the  
3 wireless communication network and second accounting information maintained by  
4 the packet data serving node for the packet data network.
- 1 3. The method of claim 1, further comprising:  
2 sending the accounting information to an accounting server based on the  
3 occurrence of a predetermined event.
- 1 4. The method of claim 3, wherein the accounting server is a Remote  
2 Authentication Dial-In User Service (RADIUS) server.
- 1 5. The method of claim 2, further comprising:  
2 merging the first accounting information and the second accounting  
3 information into a usage data record (UDR).

Docket No. 11440RRUS02U

1 6. The method of claim 1, wherein accounting information relating to a wireless  
2 communication network is obtained from accounting messages sent from the wireless  
3 communication network.

1 7. The method of claim 6, wherein the accounting messages sent from the  
2 wireless communication network include one or more of a connection setup airlink  
3 record, a connection release airlink record, an active start airlink record, an active  
4 stop airlink record, and a short data burst airlink record.

1 8. The method of claim 3, wherein the predetermined event is receipt of a  
2 session release airlink record from the wireless communication network.

1 9. The method of claim 3, wherein the predetermined event is receipt of an  
2 active stop airlink record.

1 10. The method of claim 3, wherein the predetermined event is receipt of a short  
2 data burst stop airlink record.

1 11. The method of claim 1, wherein the accounting information is accumulated  
2 over a series of short data bursts.

1 12. The method of claim 1, wherein the accounting information is accumulated  
2 over a series of active traffic channel transmissions.

1 13. The method of claim 1, wherein the accounting information includes the  
2 number of octets of data received from the mobile terminal and the number of octets  
3 sent to the mobile terminal.

1 14. The method of claim 13, wherein the number of octets of data received from  
2 the mobile terminal and the number of octets sent to the mobile terminal further

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3 includes the number of octets received from the mobile terminal in the form of short  
4 data bursts and the number of octets sent to the mobile terminal in the form of short  
5 data bursts.

1     16.     The method of claim 3, wherein the predetermined event is the expiration of  
2     an interim timer.

1 18. The method of claim 1, wherein the accounting information is associated with  
2 a session having multiple IP addresses and wherein accounting information for the  
3 wireless communication network and the packet data network are accumulated based  
4 on a session identifier and an IP address from the multiple IP addresses.

1 19. An accounting apparatus for optimizing accounting records in a  
2 wireless/packet data network, the accounting apparatus being coupled to a wireless  
3 communication network and a packet data network, the apparatus comprising:  
4 a network interface; and  
5 an accounting controller coupled to the network interface, wherein the  
6 accounting controller accumulates accounting information relating to the wireless  
7 communication network, received via the network interface, and accounting  
8 information relating to the packet data network.

1 20. The apparatus of claim 19, wherein the accounting information includes first  
2 accounting information obtained from one or more base station controllers in the

Docket No. 11440RRUS02U

3 wireless communication network and second accounting information maintained by  
4 the accounting apparatus for the packet data network.

1 21. The apparatus of claim 19, wherein the accounting controller sends the  
2 accounting information to an accounting server based on the occurrence of a  
3 predetermined event.

1 22. The apparatus of claim 21, wherein the accounting server is a Remote  
2 Authentication Dial-In User Service (RADIUS) server.

1 23. The apparatus of claim 20, wherein the accounting controller merges the first  
2 accounting information and the second accounting information into a usage data  
3 record (UDR).

1 24. The apparatus of claim 19, wherein the accounting controller receives the  
2 accounting information relating to a wireless communication network from  
3 accounting messages sent from the wireless communication network.

1 25. The apparatus of claim 24, wherein the accounting messages sent from the  
2 wireless communication network include one or more of a connection setup airlink  
3 record, a connection release airlink record, an active start airlink record, an active  
4 stop airlink record, and a short data burst airlink record.

1 26. The apparatus of claim 21, wherein the predetermined event is receipt of a  
2 session release airlink record from the wireless communication network.

1 27. The apparatus of claim 21, wherein the predetermined event is receipt of an  
2 active stop airlink record.

11440RRUS02U

Docket No. 11440RRUS02U

1 28. The apparatus of claim 21, wherein the predetermined event is receipt of a  
2 short data burst stop airlink record.

1 29. The apparatus of claim 19, wherein the accounting controller accumulates the  
2 accounting information over a series of short data bursts.

1 30. The apparatus of claim 19, wherein the accounting controller accumulates the  
2 accounting information over a series of active traffic channel transmissions.

1 31. The apparatus of claim 19, wherein the accounting information includes the  
2 number of octets of data received from a mobile terminal and the number of octets  
3 sent to the mobile terminal.

1 32. The apparatus of claim 31, wherein the number of octets of data received from  
2 the mobile terminal and the number of octets sent to the mobile terminal further  
3 includes the number of octets received from the mobile terminal in the form of short  
4 data bursts and the number of octets sent to the mobile terminal in the form of short  
5 data bursts.

1 33. The apparatus of claim 19, wherein the accounting information includes a  
2 number of short data bursts.

1 34. The apparatus of claim 21, wherein the predetermined event is the expiration  
2 of an interim timer.

1 35. A computer program product in a computer readable medium for optimizing  
2 accounting records in a wireless/packet data network, comprising:  
3 first instructions for detecting that a communication link has been established  
4 between a mobile terminal and a host in a packet data network; and

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Docket No. 11440RRUS02U

5 second instructions for accumulating, at a packet data serving node disposed  
6 between the mobile terminal and the packet data network, accounting information  
7 relating to a wireless communication network serving the mobile terminal and the  
8 packet data network, the accounting information being used by service providers to  
9 generate billing data to minimize the frequency of producing accounting records by  
10 the packet data serving node.

1 36. The computer program product of claim 35, wherein the accounting  
2 information includes first accounting information obtained from one or more base  
3 station controllers in the wireless communication network and second accounting  
4 information maintained by the packet data serving node for the packet data network.

1 37. The computer program product of claim 35, further comprising:  
2 third instructions for sending the accounting information to an accounting  
3 server based on the occurrence of a predetermined event.

1 38. The computer program product of claim 36, further comprising:  
2 third instructions for merging the first accounting information and the second  
3 accounting information into a usage data record (UDR).

1 39. The computer program product of claim 35, wherein accounting information  
2 relating to a wireless communication network is obtained from accounting messages  
3 sent from the wireless communication network, and wherein the accounting messages  
4 sent from the wireless communication network include one or more of a connection  
5 setup airlink record, a connection release airlink record, an active start airlink record,  
6 an active stop airlink record, and a short data burst airlink record.

1 40. The computer program product of claim 37, wherein the predetermined event  
2 is receipt of one of a session release airlink record from the wireless communication  
3 network, an active stop airlink record, and a short data burst stop airlink record.

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Docket No. 11440RRUS02U

- 1 41. The computer program product of claim 35, wherein the accounting  
2 information is accumulated over a series of short data bursts
- 1 42. The computer program product of claim 35, wherein the accounting  
2 information is accumulated over a series of active traffic channel transmissions.

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